PATENT ABSTRACTS OF JAPAN

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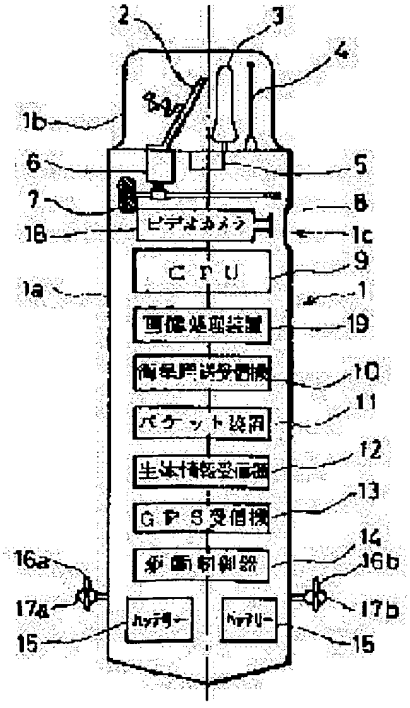
(54) INFORMATION TRANSMITTING BUOY

(57)Abstract:

PURPOSE: To detect a self position, and grasp a condition over the sea with high accuracy by detecting the self position, taking a picture around the self position, and thereby transmitting information on the self position and the image taken.

CONSTITUTION: An information transmitting buoy 1 is made up of a cylindrical buoy main body 1a, and of a buoy head section 1b, and a GPS receiving antenna 3, a geostationary satellite antenna 2 exchanging receiving/transmitting with a geostationary satellite and a bioinformation receiving antenna 4 are housed in the buoy head section 1b. The buoy main body 1a is provided with underwater motors 17a and 17b with screws 16a and 16b as a means for rotating the buoy 1 or turning it around. And a GPS receiver 13 and a video camera 18 are contained in the buoy main body 1a where the self position is detected by the GPS receiver 13 and an image around the circumference is taken by the video camera 18. Image signals are processed by an image processing means 19 so as to be transmitted to a terrestial station together with position information from the GPS receiver 13 via the geostationary satellite. On the contrary, commands from the terrestial station can be received.



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CLAIMS

[Claim(s)]
[Claim 1] The information transmitting drifting equipped with an information transmitting means transmit the image information which photoed with a self-location detection means detect the whereabouts location of self, an image pic up means photo the image of the perimeter in this location, and the information ("self-positional information" is calle hereafter.) about the whereabouts location of self detected with said self-location detection means and said image pic up means.
[Claim 2] The owner directional antenna for transmitting said self-positional information and said image information A bearing detection means to detect bearing, and a turn means to make it circle in a drifting to the circumference of t shaft of a drifting, The information transmitting drifting according to claim 1 characterized by having the control me controlled so that said owner directional antenna directs in the bearing appointed beforehand by making said turn means drive based on bearing detected with said bearing detection means, and making it circle in a drifting.
[Claim 3] The information transmitting drifting according to claim 1 characterized by to have the control means whi controls to direct in the direction in which said weight was moved based on a bearing detection means detect bearing the owner directional antenna which transmits said self-positional information and said image information, the weigh which can move to the circumference of the shaft of a drifting freely, and bearing detected by said bearing detection means, and said owner directional antenna was defined beforehand.
[Claim 4] The information transmitting drifting according to claim 3 characterized by to be what controls to direct in the direction in which you equipped the circumference of the shaft of a drifting with a turn means make it circle in a drifting, said control means made it circle in a drifting by migration of said weight and the drive of said turn means based on bearing detected by said bearing detection means, and said owner directional antenna was defined beforeha

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[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the drifting which makes it possible to get to know the marine situation in a victim's location and its location in case of the accident accident in marine, concerning an information transmitting drifting.
[0002]
[Description of the Prior Art] Although the rescue drifting is used from the former as a means for rescuing a victim when the sinking accident of a vessel etc. occurs in marine, rescue of the victim by this rescue drifting is performed a follows. That is, at the time of the accident of a vessel, this rescue drifting is emitted at sea with a rescue boat. This rescue drifting is equipped with a transmitter, the signal emitted from this rescue drifting is received in two or more receiving stations (an earth station, marine station, etc.), the direction of signal generation is detected by each station and a dispatch location, i.e., the location of a rescue drifting, is detected as crossover area of each detected direction. And this detection area is searched by the vessel or the aircraft, and a victim is rescued.
[0003]
[Problem(s) to be Solved by the Invention] However, in the conventional rescue system using said rescue drifting, th detection area detected as a whereabouts location of a rescue drifting was the precision of about 10km extent around and in order to have searched for the rescue drifting, i.e., a victim, by the vessel or the aircraft in this area, it had required about four days. Immediate rescue of survivors was requested in case of accident accident, and, for this reas improvement in the location detection precision of a rescue drifting was desired.
[0004] Moreover, if it was in said conventional rescue drifting, it is [that positional information is only only acquire and] and a victim was not able to know the marine situation of the on-site region placed now.
[0005] this invention was made that the problem in this conventional rescue drifting should be solved, can grasp the marine situation in this location, and aims at offering the information transmitting drifting which can rescue a quick efficient victim while it is boiled markedly and detects a self-location with a sufficient precision from the convention rescue drifting.
[0006]
[Means for Solving the Problem] The information transmitting drifting concerning invention of the 1st of this application is equipped with a self-location detection means detect the whereabouts location of self, an image pick-u means photo the image of the perimeter in this location, and an information transmitting means transmit the image information photoed with the self-positional information detected with said self-location detection means, and said image pick-up means that said purpose should attain.
[0007] Moreover, the information transmitting drifting concerning invention of the 2nd of this application The owne directional antenna for transmitting said self-positional information and said image information in said 1st invention bearing detection means to detect bearing, and a turn means to make it circle in a drifting to the circumference of the shaft of a drifting, It is characterized by having the control means controlled so that said owner directional antenna directs in the bearing appointed beforehand by making said turn means drive based on bearing detected with said bearing detection means, and making it circle in a drifting.
[0008] Moreover, the information transmitting drifting concerning invention of the 3rd of this application A bearing detection means to detect bearing in said 1st invention, and the owner directional antenna which transmits said self-positional information and said image information, It is characterized by having the control means controlled to direc in the direction in which said weight was moved based on the weight which can move to the circumference of the sh of a drifting freely, and bearing detected by said bearing detection means, and said owner directional antenna was defined beforehand.
[0009] Furthermore, the information transmitting drifting concerning invention of the 4th of this application In said t application 3rd invention, it has a turn means to make it circle in a drifting to the circumference of the shaft of a

drifting. It is characterized by being what controls to direct in the direction in which said control means made it circl in a drifting by migration of said weight and the drive of said turn means based on bearing detected by said bearing detection means, and said owner directional antenna was defined beforehand.
[0010]
[Function] In the information transmitting drifting concerning this invention, while said self-location detection mean detects a self-location (whereabouts location of a drifting), said image pick-up means photos the situation of the perimeter in the whereabouts location of a drifting. And the detected self-positional information and the image information photoed by the list are transmitted to an earth station or a mobile station through a geostationary satellite by said information transmitting means.
[0011] Moreover, in this invention, the self-location detection system which used the satellite called NAVSTAR/GP ("GPS" is called NAVi gation System with Time And Ra-nging/Grobal Positioning System and the following.) as sa self-location detection means is used.
[0012] This GPS is the system developed by the U.S. Department of Defense, and it consists of 24 satellites which tu around the surroundings of the earth in about 12 hours, and five monitor offices and control stations, and a user only has the receiver of dedication and can know an exact self-location. Although this system is developed for the purpos of military use, by current, it is possible also for private sector use, and is going into a practical use phase as a navigation system of an automobile also in current Japan at the beginning.
[0013] By using this GPS, the precision of dozens of m range of the positional information which comes to hand from this information transmitting drifting becomes about possible, and it can know a drifting, i.e., a victim's exact whereabouts location. Furthermore, in this drifting, it becomes possible to also grasp the marine situation in the poin which the current victim is assigned using said image information transmitted with this positional information.
[0014] In invention of the 2nd of this application, a bearing detection means detects orientation bearing of the owner directional antenna which transmits the sense, i.e., said self-positional information, and image information on a drifti And said control means makes a turn means drive, and makes the direction of a geostationary satellite point to a drifting, i.e., an antenna, by comparing the information about bearing in which the geostationary satellite beforehand remembered to be the information about orientation bearing of this antenna is located.
[0015] Moreover, in invention of the 3rd of this application, orientation bearing of a drifting, i.e., an owner direction antenna, is changed from the medial axis of a drifting like said this application 2nd invention with the weight arrange by carrying out eccentricity. This weight is constituted movable at the circumference of an axis in the field which intersects perpendicularly with the axis of a drifting, and turns a drifting by migration of this weight.
[0016] It will be as follows if the approach of this turn is explained. Although the drifting 1 which floats on a sea surface 21 inclines with reference to drawing 3 ((a) is a top view and (b) is a side elevation.) so that a head may be located in leeward side with the wind pressure in response to the marine wind 20 Since eccentricity is carried out to t drifting 1 concerning this invention from medial-axis Z' of a drifting as mentioned above and weight 7 is arranged, a drifting 1 will circle so that weight 7 may always come to a low location (leeward side).
[0017] The drifting of this invention acquires the slewing motion force of a drifting using this principle. If a windwa is made to carry out constant-rate migration of the weight 7 which was located in leeward side (low location) and is stable from leeward side conversely, since weight 7 tends to return to the leeward side location of a basis, it will become possible to be able to make it circle in a drifting 1 by the movement magnitude of said weight, therefore to make a geostationary satellite 30 point to an antenna 2 of it.
[0018] Moreover, in the drifting of this invention, as mentioned above, since it is always going to locate weight in a lee-side location, if a drifting (antenna) will always turn to fixed bearing, therefore end bearing is controlled as long a wind is fixed, unless a wind changes, it does not need to make weight drive, and, in addition to the stability of azimuth control becoming good, can also attain power-saving.
[0019] Furthermore, the turn means with which the drifting concerning said this application 2nd invention was equipped in invention of the 4th of this application, When it has the movable weight with which the drifting concern said this application 3rd invention was equipped, and a drifting receives a wind and inclines As mentioned above, wi weight, on the other hand, orientation control of an antenna is performed, it is almost calm, and when the inclination a drifting is very small, the turn by said turn means is performed and orientation control of an antenna is performed.
[0020]
[Example] The example of this invention is explained based on a drawing. The outline configuration of the informati transmitting drifting which starts one example of this invention at drawing 1 is shown. (a) of this drawing is a side elevation, and (b) is a top view. Like illustration, the information transmitting drifting 1 concerning this example consists of drifting body 1a formed in the shape of a cylinder, and drifting head 1b prepared in the upper part of this drifting body 1a, and the receiving antenna 3 for GPS and the antenna 2 for geostationary satellites (owner directiona antenna) which transmit and receive to a geostationary satellite are contained by drifting head 1b.
[0021] Two submersible motors 17a and 17b which equipped the circumference of a shaft with Screws 16a and 16b

a turn means to make it circle in a drifting 1 are installed in the paries-lateralis-orbitae side of drifting body 1a. These submersible motors 17a and 17b are mutually arranged to the medial axis of a drifting 1 at the position of symmetry like illustration, if motor 17a is made to drive, a drifting 1 will circle clockwise in drawing (b), and if motor 17b is made to drive on the contrary, they will circle counterclockwise. In addition, although the submersible motor was us as a turn means in this example, the jet stream equipment which it replaces [equipment] with this and makes a strea blow off can also be used.

[0022] moreover, in drifting body 1a The situation GPS receiver 13 as a self-location detection means for detecting t whereabouts location of self and around a drifting is photoed. By the image processing system 19 which processes th video signal from a video camera 18 and a video camera 18 which acquires image information, and GPS receiver 13 The transmitter-receiver 10 for geostationary satellites which receives the command signal from an earth station etc. through a geostationary satellite while turning to a geostationary satellite the image information acquired with the positional information and the video camera 18 which were detected and transmitting, the electronic compass 5 (a gyrocompass etc. may be used) as a bearing detection means to detect bearing, The drive controller 14 and CPU9 gra which perform drive control of said submersible motors 17a and 17b are contained. In addition, aperture 1c is prepar in the drifting body outer wall, and said video camera 18 adopts a surrounding image from this aperture 1c.

[0023] Moreover, the dc-battery 15 used as power sources, such as said GPS receiver, a video camera and the transmitter-receiver for geostationary satellites, and a submersible motor, is held in the drifting body 1a pars basilari ossis occipitalis, and for example, the lead accumulation-of-electricity ground, a nickel-cadmium battery, a mangane lithium cell, etc. are used for this dc-battery. Moreover, these cells and solar batteries can be made to be able to use together, and a power source can also be constituted.

[0024] Furthermore, eccentricity is carried out to the upper part in drifting body 1a from the medial axis of a drifting weight 7 is arranged in it, and this weight 7 is constituted movable by the driving means which consists of a motor 6 and a rail 8 at the circumference of the medial axis of a drifting 1.

[0025] In this drifting, while said GPS receiver 13 detects the whereabouts location of a drifting 1, the image around drifting is photoed with said video camera. And the video signal from a video camera 18 is digital-signal-ized with a image processing system 19, and is transmitted to an earth station or a mobile station by the transmitter 10 for geostationary satellites with the self-positional information detected by said GPS receiver 13 as image information. While the whereabouts location of a drifting 1, i.e., a victim, is correctly detectable in an earth station etc. by this, the marine situation that the image information in this location is acquired, and the victim is placed at a glance can be grasped.

[0026] Here, in this drifting 1, the weight 7 in which said submersible motors 17a and 17b and said migration are fre performs orientation control of the antenna 2 for geostationary satellites. Namely, although a drifting 1 will be circle and stabilized by weight 7 as mentioned above so that it may be located in leeward side when a drifting 1 receives a wind and inclines The information about bearing in which the geostationary satellite beforehand remembered to be th bearing information from said electronic compass 5 in CPU9 is located is compared, and it is made to circle in a drifting 1 (antenna 2 for geostationary satellites), when only the difference of the azimuth of them moves said weigh to a windward.

[0027] On the other hand, it is almost calm, and when the inclination of a drifting is very small, said submersible motors 17a and 17b are made to drive, and a drifting 1 is turned. Although drawing 2 is the block diagram showing t control approach of these submersible motors 17a and 17b, bearing information is inputted into CPU9 from the electronic compass 5 like illustration, the driving signal of a motor is outputted to the drive controllers 14 and 14 fro CPU9 based on this bearing information, and motor 17a or 17b drives it. In addition, of course also in the condition t there is said wind, control by the drive of this submersible motor may be performed.

[0028] Moreover, the biological information receiver 12 is carried in this drifting 1. The biological information whic this receives the biological information (the victim's heartbeat, temperature, etc.) sent from a victim's life jacket, and came to hand with this receiver 12 is transmitted to an earth station etc. through a geostationary satellite with said se positional information. In addition, the antenna 4 for these biological information receivers is contained by drifting head 1b.

[0029] An example of the orientation control approach of the antenna for geostationary satellites in the drifting concerning this invention is explained based on a drawing. Although drawing 4 is a celestial chart, in this drawing, 1 a drifting and the drifting which 1' received the wind 20 and inclined, Z and Z' shows the medial axis of a drifting, an 40-42 show the orientation of the antenna for geostationary satellites, respectively. Moreover, A shows the location o geostationary satellite and S shows the range in which access with this geostationary satellite is possible.

[0030] Although it sets calm, the antenna for geostationary satellites with which the drifting 1 was equipped points to the direction A of a geostationary satellite and access with (40) and a satellite is possible, if a wind 20 is received in marine, in order that this drifting 1 may incline to leeward side with the wind pressure (1'), the antenna for geostationary satellites installed in the drifting will point to A1 direction (41). For this reason, access with a

geostationary satellite A becomes impossible.
[0031] then, the weight in which said submersible motor or said migration is free -- drifting 1' -- medial-axis Z' -- it i made to circle around, an antenna is pointed to the inside of the field S in which access with said geostationary satell is possible, and this aims at access with a geostationary satellite.
[0032] In addition, in this drifting, in order to transmit said image information, after making it circle in a drifting wit the weight in which said submersible motor or said migration is free and storing the image information on surroundi said antenna for geostationary satellites is turned in the direction of a satellite, and this image information can be transmitted to an earth station. Moreover, as said image information, an animation is transmitted, and also you may constitute so that a static image may be transmitted.
[0033]
[Effect of the Invention] While a victim's whereabouts location is detectable with a sufficient precision according to this invention as explained above, the marine situation in this location can be grasped easily visually, and quick and efficient rescue of a victim is attained.

[Translation done.]

MEANS

[Means for Solving the Problem] The information transmitting drifting concerning invention of the 1st of this application is equipped with a self-location detection means detect the whereabouts location of self, an image pick-u means photo the image of the perimeter in this location, and an information transmitting means transmit the image information photoed with the self-positional information detected with said self-location detection means, and said image pick-up means that said purpose should attain.
[0007] The information transmitting drifting which starts invention of the 2nd of this application again as for this invention is characterized by said 1st invention possessing the following. The owner directional antenna for transmitting said self-positional information and said image information A bearing detection means to detect bearing turn means to make it circle in a drifting to the circumference of the shaft of a drifting The control means controlled that said owner directional antenna directs in the bearing appointed beforehand by making said turn means drive bas on bearing detected with said bearing detection means, and making it circle in a drifting
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[0009] Furthermore, the information transmitting drifting concerning invention of the 4th of this application In said t application 3rd invention, it has a turn means to make it circle in a drifting to the circumference of the shaft of a drifting. It is characterized by being what controls to direct in the direction in which said control means made it circl in a drifting by migration of said weight and the drive of said turn means based on bearing detected by said bearing detection means, and said owner directional antenna was defined beforehand.

[Translation done.]

OPERATION

[Function] In the information transmitting drifting concerning this invention, while said self-location detection mean detects a self-location (whereabouts location of a drifting), said image pick-up means photos the situation of the perimeter in the whereabouts location of a drifting. And the detected self-positional information and the image information photoed by the list are transmitted to an earth station or a mobile station through a geostationary satellite by said information transmitting means.

[0011] Moreover, in this invention, the self-location detection system which used the satellite called NAVSTAR/GP ("GPS" is called NAVi gation System with Time And Ra-nging/Grobal Positioning System and the following.) as sa self-location detection means is used.

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[0013] By using this GPS, the precision of dozens of m range of the positional information which comes to hand from this information transmitting drifting becomes about possible, and it can know a drifting, i.e., a victim's exact whereabouts location. Furthermore, in this drifting, it becomes possible to also grasp the marine situation in the poin which the current victim is assigned using said image information transmitted with this positional information.

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[0016] It will be as follows if the approach of this turn is explained. Although the drifting 1 which floats on a sea surface 21 inclines with reference to drawing 3 ((a) is a top view and (b) is a side elevation.) so that a head may be located in leeward side with the wind pressure in response to the marine wind 20 Since eccentricity is carried out to t drifting 1 concerning this invention from medial-axis Z' of a drifting as mentioned above and weight 7 is arranged, a drifting 1 will circle so that weight 7 may always come to a low location (leeward side).

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[0018] Moreover, in the drifting of this invention, as mentioned above, since it is always going to locate weight in a lee-side location, if a drifting (antenna) will always turn to fixed bearing, therefore end bearing is controlled as long a wind is fixed, unless a wind changes, it does not need to make weight drive, and, in addition to the stability of azimuth control becoming good, can also attain power-saving.

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[Translation done.]

EXAMPLE

[Example] The example of this invention is explained based on a drawing. The outline configuration of the informati transmitting drifting which starts one example of this invention at drawing 1 is shown. (a) of this drawing is a side elevation, and (b) is a top view. Like illustration, the information transmitting drifting 1 concerning this example consists of drifting body 1a formed in the shape of a cylinder, and drifting head 1b prepared in the upper part of this drifting body 1a, and the receiving antenna 3 for GPS and the antenna 2 for geostationary satellites (owner directiona antenna) which transmit and receive to a geostationary satellite are contained by drifting head 1b.

[0021] Two submersible motors 17a and 17b which equipped the circumference of a shaft with Screws 16a and 16b a turn means to make it circle in a drifting 1 are installed in the paries-lateralis-orbitae side of drifting body 1a. These submersible motors 17a and 17b are mutually arranged to the medial axis of a drifting 1 at the position of symmetry like illustration, if motor 17a is made to drive, a drifting 1 will circle clockwise in drawing (b), and if motor 17b is made to drive on the contrary, they will circle counterclockwise. In addition, although the submersible motor was us as a turn means in this example, the jet stream equipment which it replaces [equipment] with this and makes a strea blow off can also be used.

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[0023] Moreover, the dc-battery 15 used as power sources, such as said GPS receiver, a video camera and the transmitter-receiver for geostationary satellites, and a submersible motor, is held in the drifting body 1a pars basilari ossis occipitalis, and for example, the lead accumulation-of-electricity ground, a nickel-cadmium battery, a mangane lithium cell, etc. are used for this dc-battery. Moreover, these cells and solar batteries can be made to be able to use together, and a power source can also be constituted.

[0024] Furthermore, eccentricity is carried out to the upper part in drifting body 1a from the medial axis of a drifting weight 7 is arranged in it, and this weight 7 is constituted movable by the driving means which consists of a motor 6 and a rail 8 at the circumference of the medial axis of a drifting 1.

[0025] In this drifting, while said GPS receiver 13 detects the whereabouts location of a drifting 1, the image around drifting is photoed with said video camera. And the video signal from a video camera 18 is digital-signal-ized with a image processing system 19, and is transmitted to an earth station or a mobile station by the transmitter 10 for geostationary satellites with the self-positional information detected by said GPS receiver 13 as image information. While the whereabouts location of a drifting 1, i.e., a victim, is correctly detectable in an earth station etc. by this, the marine situation that the image information in this location is acquired, and the victim is placed at a glance can be grasped.

[0026] Here, in this drifting 1, the weight 7 in which said submersible motors 17a and 17b and said migration are fre performs orientation control of the antenna 2 for geostationary satellites. Namely, although a drifting 1 will be circle and stabilized by weight 7 as mentioned above so that it may be located in leeward side when a drifting 1 receives a wind and inclines The information about bearing in which the geostationary satellite beforehand remembered to be th bearing information from said electronic compass 5 in CPU9 is located is compared, and it is made to circle in a drifting 1 (antenna 2 for geostationary satellites), when only the difference of the azimuth of them moves said weigh to a windward.

[0027] On the other hand, it is almost calm, and when the inclination of a drifting is very small, said submersible

motors 17a and 17b are made to drive, and a drifting 1 is turned. Although drawing 2 is the block diagram showing t control approach of these submersible motors 17a and 17b, bearing information is inputted into CPU9 from the electronic compass 5 like illustration, the driving signal of a motor is outputted to the drive controllers 14 and 14 fro CPU9 based on this bearing information, and motor 17a or 17b drives it. In addition, of course also in the condition t there is said wind, control by the drive of this submersible motor may be performed.

[0028] Moreover, the biological information receiver 12 is carried in this drifting 1. The biological information whic this receives the biological information (the victim's heartbeat, temperature, etc.) sent from a victim's life jacket, and came to hand with this receiver 12 is transmitted to an earth station etc. through a geostationary satellite with said se positional information. In addition, the antenna 4 for these biological information receivers is contained by drifting head 1b.

[0029] An example of the orientation control approach of the antenna for geostationary satellites in the drifting concerning this invention is explained based on a drawing. Although drawing 4 is a celestial chart, in this drawing, 1 a drifting and the drifting which 1' received the wind 20 and inclined, Z and Z' shows the medial axis of a drifting, an 40-42 show the orientation of the antenna for geostationary satellites, respectively. Moreover, A shows the location o geostationary satellite and S shows the range in which access with this geostationary satellite is possible.

[0030] Although it sets calm, the antenna for geostationary satellites with which the drifting 1 was equipped points to the direction A of a geostationary satellite and access with (40) and a satellite is possible, if a wind 20 is received in marine, in order that this drifting 1 may incline to leeward side with the wind pressure (1'), the antenna for geostationary satellites installed in the drifting will point to A1 direction (41). For this reason, access with a geostationary satellite A becomes impossible.

[0031] then, the weight in which said submersible motor or said migration is free -- drifting 1' -- medial-axis Z' -- it i made to circle around, an antenna is pointed to the inside of the field S in which access with said geostationary satell is possible, and this aims at access with a geostationary satellite.

[0032] In addition, in this drifting, in order to transmit said image information, after making it circle in a drifting wit the weight in which said submersible motor or said migration is free and storing the image information on surroundi said antenna for geostationary satellites is turned in the direction of a satellite, and this image information can be transmitted to an earth station. Moreover, as said image information, an animation is transmitted, and also you may constitute so that a static image may be transmitted.

[Translation done.]

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is a schematic diagram about the configuration of one example of this invention.
[Drawing 2] It is the block diagram showing the control approach of the submersible motor with which the drifting o an example is equipped.
[Drawing 3] It is the explanatory view showing a condition when the drifting of an example receives a wind.
[Drawing 4] It is a celestial chart explaining an example of the orientation control approach of the antenna for geostationary satellites in the drifting concerning this invention.
[Description of Notations]
1 1' Self-positional information transmitting drifting
1a Drifting body
1b Drifting head
1c Aperture
2 Antenna for Geostationary Satellites (Owner Directional Antenna)
3 Receiving Antenna for GPS
4 Antenna for Biological Information Receivers
5 Electronic Compass
6 Motor
7 Weight
8 Rail
9 CPU
10 Transmitter-receiver for Geostationary Satellites
11 Packet Equipment
12 Biological Information Receiver
13 GPS Receiver
14 Drive Controller
15 Dc-battery
16a, 16b Screw
17a, 17b Submersible motor
18 Video Camera
19 Image Processing System
A The location of a geostationary satellite
A1, A2 Directing point of the antenna for geostationary satellites
40, 41, 42 Orientation of the antenna for geostationary satellites
S The field which can be accessed to a geostationary satellite
Z, Z' Medial axis of a drifting
In addition, a same-among drawing sign shows the same or a considerable part.

[Translation done.]

* NOTICES *

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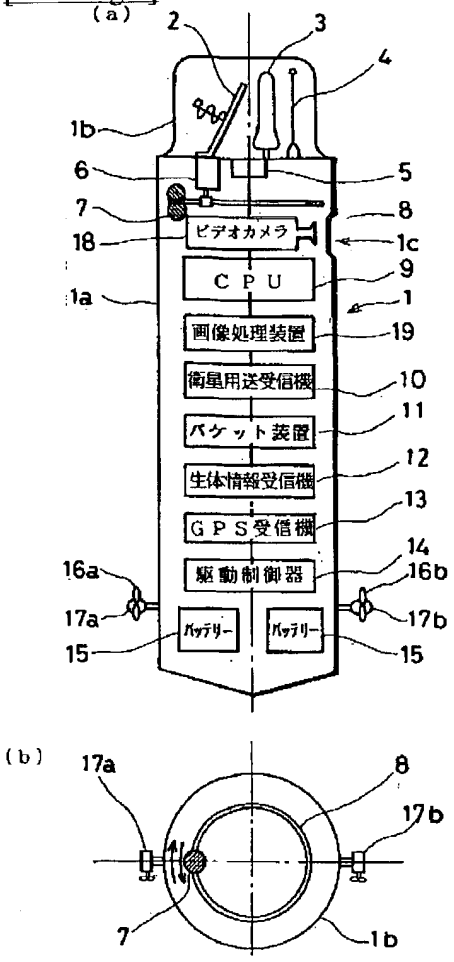
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

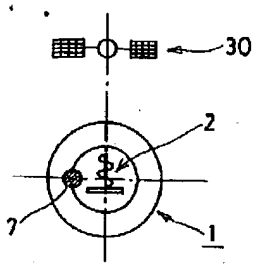
[Drawing 1]



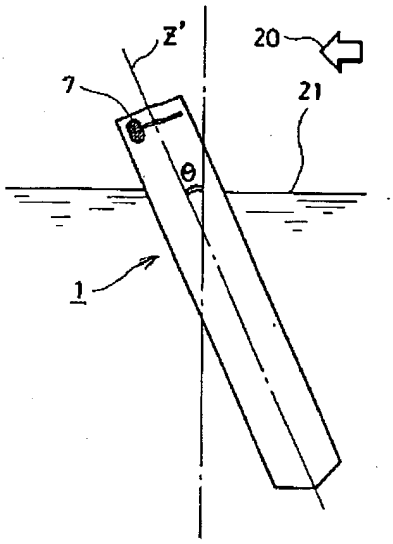
1a: buoy main body
1b: buoy head
2: satellite antenna
3: GPS antenna
4: bioinformation antenna
18: camera
19: image processing
10: transceiver for geostationary satellite
5: electronic compass
14: drive controller
17a, 17b: motors
15: various DC power source

[Drawing 3]

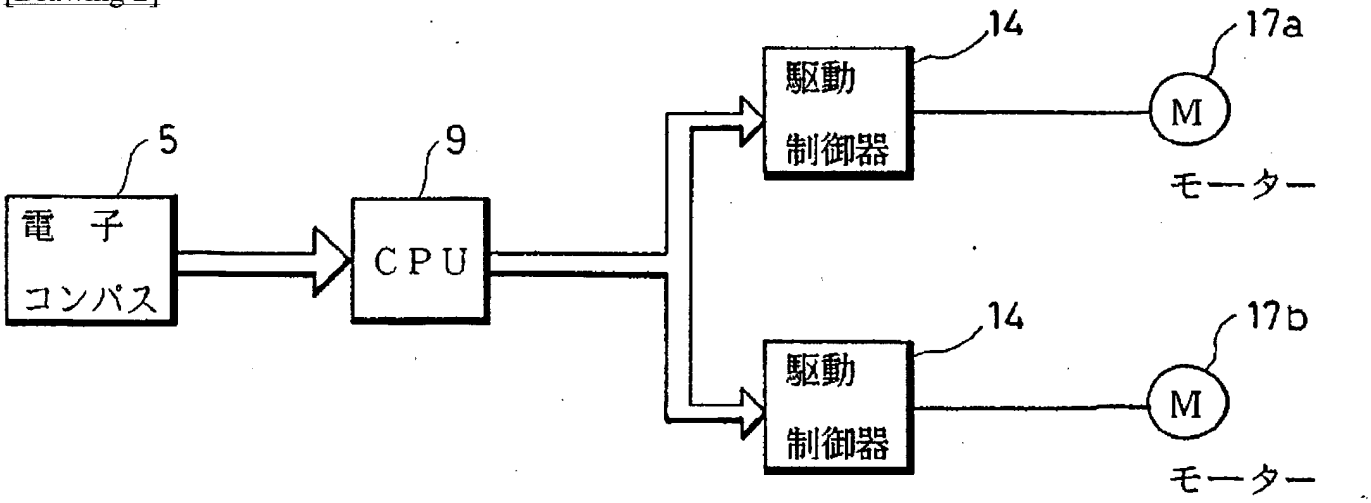
(a)



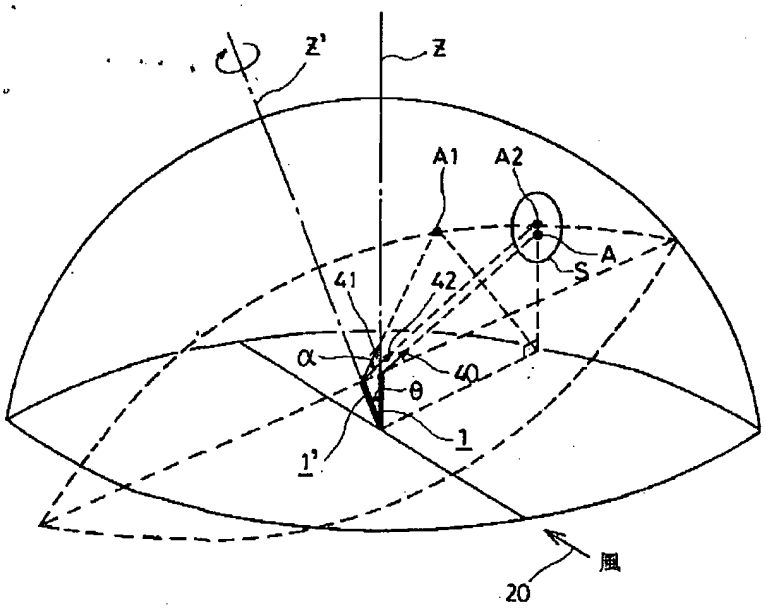
(b)



[Drawing 2]



[Drawing 4]



[Translation done.]